

**Claims**

1. Vessel for receiving or melting molten silicon comprising a silicon composite thermet sprayed coating comprising metal silicon, silicon nitride and silicon oxide on at least a part of the interior wall of the silicon holding vessel, **characterized in that** the silicon composite thermet sprayed coating has a mixing ratio of metal silicon (X): silicon nitride (Y): silicon oxide (Z) of X:Y:Z = 20-50: 77-30: 3-20.
2. A vessel according to claim 1, **characterized in that** the silicon composite thermet sprayed coating is formed by spraying a silicon composite thermet material made by adding metal silicon as a bonding material to a mixture of  $\text{Si}_3\text{N}_4$  and  $\text{SiO}_2$ .
3. A vessel according to claim 1 or 2, **characterized in that** the silicon holding vessel is made from a material comprising silicon oxide, boron nitride and/or graphite.
4. A vessel according to claim 3, wherein the silicon oxide ( $\text{SiO}_2$ ) is densified or sintered fused silica.
5. A vessel according to claim 1, **characterized in that** the coating has a thickness of 20-500  $\mu\text{m}$ , preferably of 50-300  $\mu\text{m}$ .
6. A method of producing a vessel for receiving or melting molten silicon, which comprises spraying a silicon composite thermet material consisting of metal silicon, silicon nitride and silicon oxide on the interior wall of said vessel, thereby forming a silicon composite thermet sprayed coating wherein the silicon thermet sprayed coating has a mixing ratio of metal silicon (X): silicon nitride (Y): silicon oxide (Z) of X:Y:Z = 20-50: 77-30: 3-20.
7. A method according to claim 6, wherein said vessel is made from a material comprising silicon oxide, boron nitride and/or graphite, preferably densified or sintered fused silica.